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COSMOCHTHONIUS ZANINI SP. N. (ACARI, ORIBATIDA, COSMOCHTHONIIDAE) FROM THE EASTERN MEDITERRANEA

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***Cosmochthonius zanini* sp. n. (Acari, Oribatida, Cosmochthoniidae) from the Eastern Mediterranea. Penttinen R., Gordeeva E.** — *Cosmochthonius zanini* Penttinen et Gordeeva sp. n. from the southern Coast of Crimea (Ukraine), Rhodes (Greece) and Turkey is described. It belongs to the *reticulates foliatus* group of species with thick cerotegument, but differs from other species by widened notogastral setae *c* and *d,* and comparatively long setae *cp*. Specimens from Turkey and Greece differ from the Crimean ones by longer secondary seta on setae f_1 and f_2. The description has been illustrated by SEM micrographs. The type material is deposited in the Zoological Museum of the University of Turku.

Key words: Acari, Oribatida, *Cosmochthonius*, cerotegument, Eastern Mediterranea.

***Cosmochthonius zanini* sp. n. (Acari, Oribatida, Cosmochthoniidae) из Восточного Средиземноморья. Пенттинен Р., Гордеева Е.** — Описан Cosmochthonius zanini Penttinen et Gordeeva sp. n. с южного берега Крыма (Украина), о. Родос (Греция) и Турции. Он относится к группе видов *reticulates foliatus*, имеющих толстый церотегумент, отличаясь от других видов рода расширенными хетами *c* и *d* и сравнительно длинными хетами ср. Экземпляры из Турции и Греции отличаются от крымских более длинными вторичными щетинками на хетах f_1 и f_2. Описание иллюстрировано микрофотографиями, сделанными с помощью сканирующего электронного микроскопа. Типовой материал хранится в Зоологическом музее Университета г. Турку (Финляндия).

Ключевые слова: Acari, Oribatida, *Cosmochthonius*, церотегумент, Восточное Средиземноморье.

Introduction

The genus *Cosmochthonius* Berlese, 1910 has cosmopolitan distribution. Its type species, *C. lanatus* (Michael, 1885) was originally described from England. Most of *Cosmochthonius* species are known from the Palaearctic Region and their diversity is especially large in the Mediterranean Area A new species was found in the costal area of the South-Eastern Crimea (Ukraine) and, later, in two different places of Eastern Mediterranea, in Turkey (Marmaris) and Greece (Rhodes).

Methods

In the description below, we follow the terminology of morphological and chaetotaxic notations of Grandjean (1962) and Mahunka & Zombori (1985). The specimens were studied and photographed with a scanning electron microscope (JEOL JSM–5200) equipped with digital image recording system for SEM (SemAfore 4). The drawings were made with a camera lucida attached to a compound microscope.

Cosmochthonius zanini Penttinen et Gordeeva sp. n. (fig. 1–17)

Material examined. Holotype (female): Ukraine, Crimea (45°10' N, 35°), Karadag Natural Reserve, 50–60 m a. s. l., litter of *Quercus pubescens*, 19.07.1994, (Gordeeva leg.) [ACA. ORI. PAL. XXX] (in alcohol). Paratypes: 6 specimens [ACA. ORI. PAL. XXY] with the same label data as the holotype (3 specimens in alcohol and 3 specimens on SEM stubs); 6 specimens in alcohol [ACA. ORI. PAL. XXY]: Greece, Rhodes, Atavyros, litter of *Cupressus sempervirens*, 31.05.1996 (Niemi leg.); 3 specimens on SEM-stub [ACA. ORI. PAL. XXY]: Greece,

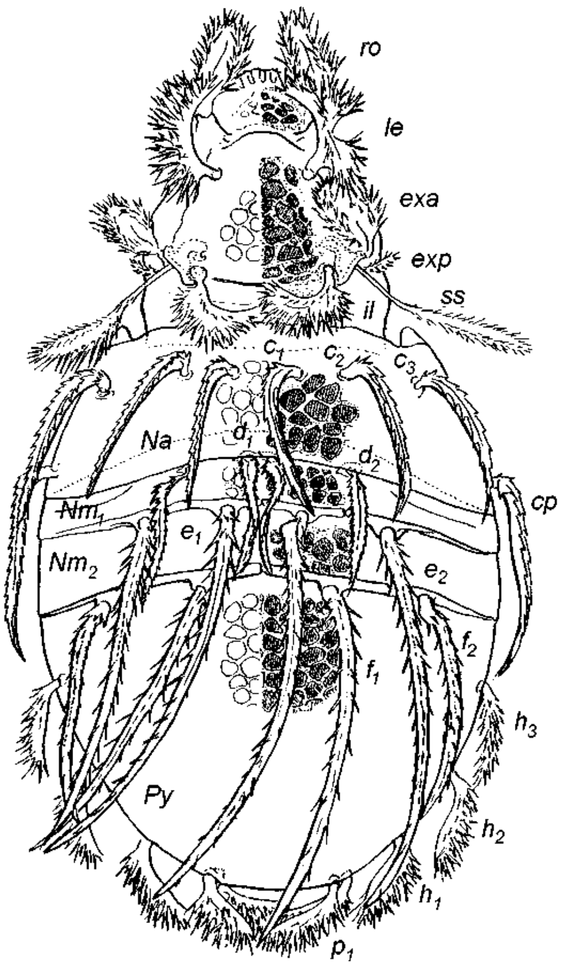


Fig. 1. *Cosmochthonius zanini* — dorsal view.
Рис. 1. *Cosmochthonius zanini* — дорсальная сторона.

Rhodes, Atavyros, maccia stand, 31.05.1996 (Niemi leg.); 1 specimen on SEM-stub [ACA. ORI. PAL. XXY]: Turkey, Marmaris, Armutalan, 300 m a. s. l. pine litter on slope, 19.05.1995 (Ylipietilд leg.). The type material is deposited in the Zoological Museum of the University of Turku.

Measurements. Holotype: length 292 mkm, width 173 mkm. Paratypes — 3 exe.

1) 277 × 152 (mkm); 2) 293 × 164 (mkm); 3) 287 × 168 (mkm).

Colour: yellowish-brown.

Integument. Dorsal side of body, except the dorso-sejugal suture, covered by thick cerotegument with small granules, irregular pores and big holes, and having reticulate appearance (fig. 2—5). Cerotegument is denser on strips above transversal sutures. Cuticle on dorsal side of body with foveolae, whereas cuticle of dorso-sejugal region with thin, longitudinal lines.

Prodorsum (fig. 6—10) covered by continuous cerotegument, the densist on margin of rostrum. Rostrum with 5—7 longitudinal apertures and blunt apex without dents.

Narrow transversal cuticular ridge in the base of prodorsum between bothridia is covered by cerotegumental "collar" with straight back border.

Rostral setae (*ro*) on tubercle, phylliform, long and thick, with bi- or trifurcate bristles. Lamellar setae (*le*) biramous, lateral flatten, with bi- or trifurcate bristles. Posterior branch of setae *le* short, whereas anterior branch long and wide. Setae *ro* and *le* with thin acute angle tops. Interlamellar setae (*il*) phylliform, long, lateral flatten, with bi- or trifurcate bristles. Anterior exobothridial setae (*exa*) dorsoventrally flatten, almost round, with folds and spinose, whereas posterior exobothridial setae (*exp*) short and penicillate. Sensillus (ss) long (60.4 mkm), its wide head longer than stalk and covered with some longitudinal rows bristles on the upper and lateral sides and central row bristles on the bottom.

Notogaster (fig. 1—4). All plates of notogaster (*Na*, Nm_1, Nm_2 and *Py*) covered with robust cerotegument just as prodorsum. First plate *Na* with four pairs of setae (c_1, c_2, c_3, *cp*), second plate Nm_1 with two pairs of setae, d_1 and d_2. Setae *c*, *d* and *cp* extended, phylliform, thick in the base and triangular in cross-section. Dorsal surface and margins of setae covered by small spines.

Insertion points of setae c_1, c_2 and c_3 situated on the same level along frontal margin of plate *Na*, and the setae *cp* in postero-lateral angles of this plate. Distances between c_1—c_1 (20.0) < c_1-c_2 (21 mkm) < c_2-c_3 (22.5 mkm). Setae c_1 (48.7 mkm) < c_2 (53.5 mkm) < c_3 (60.2 mkm). Setae *cp* particularly long (72.8 mkm), reaching over insertion points of setae h_3 on plate *Py*. Insertion points of setae *d* covered by posterior part of *Na*. Setae d_1 (18.5 mkm) < d_2 (21.6 mkm) and d_1-d_1 < d_1-d_2.

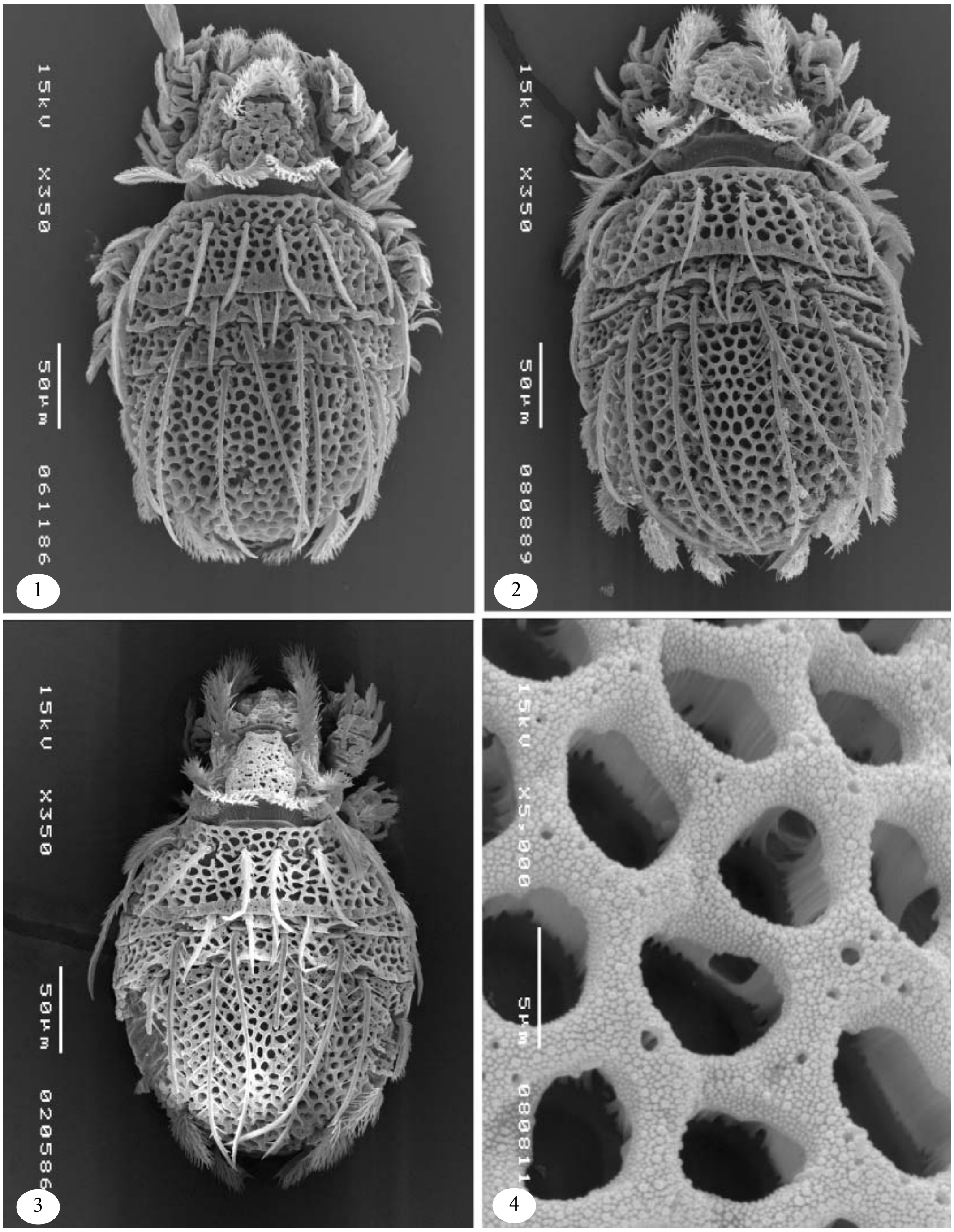


Fig. 2–5. *Cosmochthonius zanini:* 2 — dorsal view (paratype); 3 — dorsal view of a speciment from Greece; 4 — dorsal view of a speciment from Turkey; 5 — structure of cerotegument.

Рис. 2–5. *Cosmochthonius zanini*: 2 — дорсально (паратип), 3 — дорсально, экземпляр из Греции; 4 — дорсально; экземпляр из Турции; 5 — строение церотегумента.

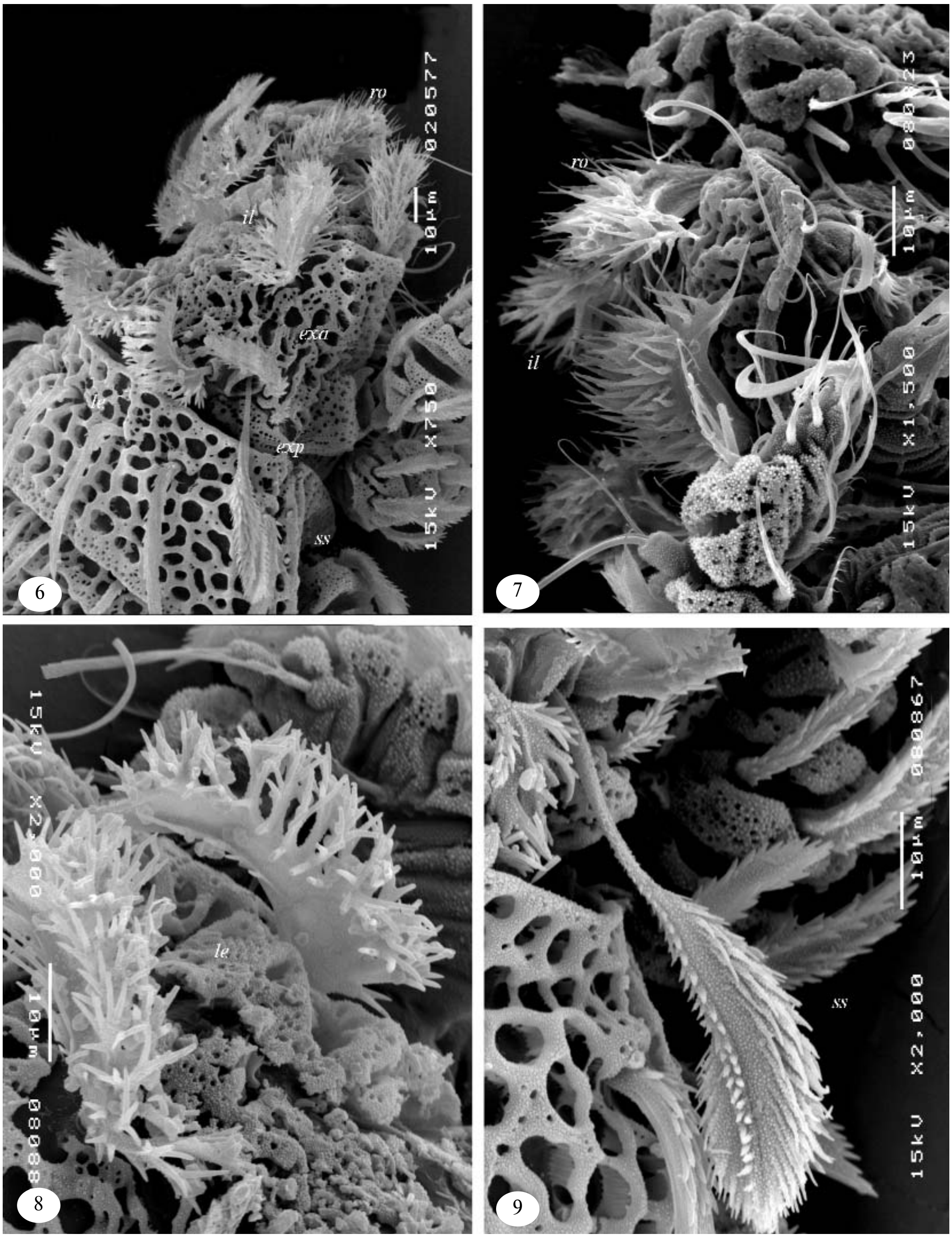


Fig. 6–9. *Cosmochthonius zanini*: 6 — prodorsum; 7 — rostrum; 8 — lamellar setae; 9 — sensilla (see abbreviations in text).

Рис. 6–9. *Cosmochthonius zanini*: 6 — продорсум; 7 — рострум; 8 — ламеллярные щетинки, 9 — сенсилла (см. сокращения в тексте).

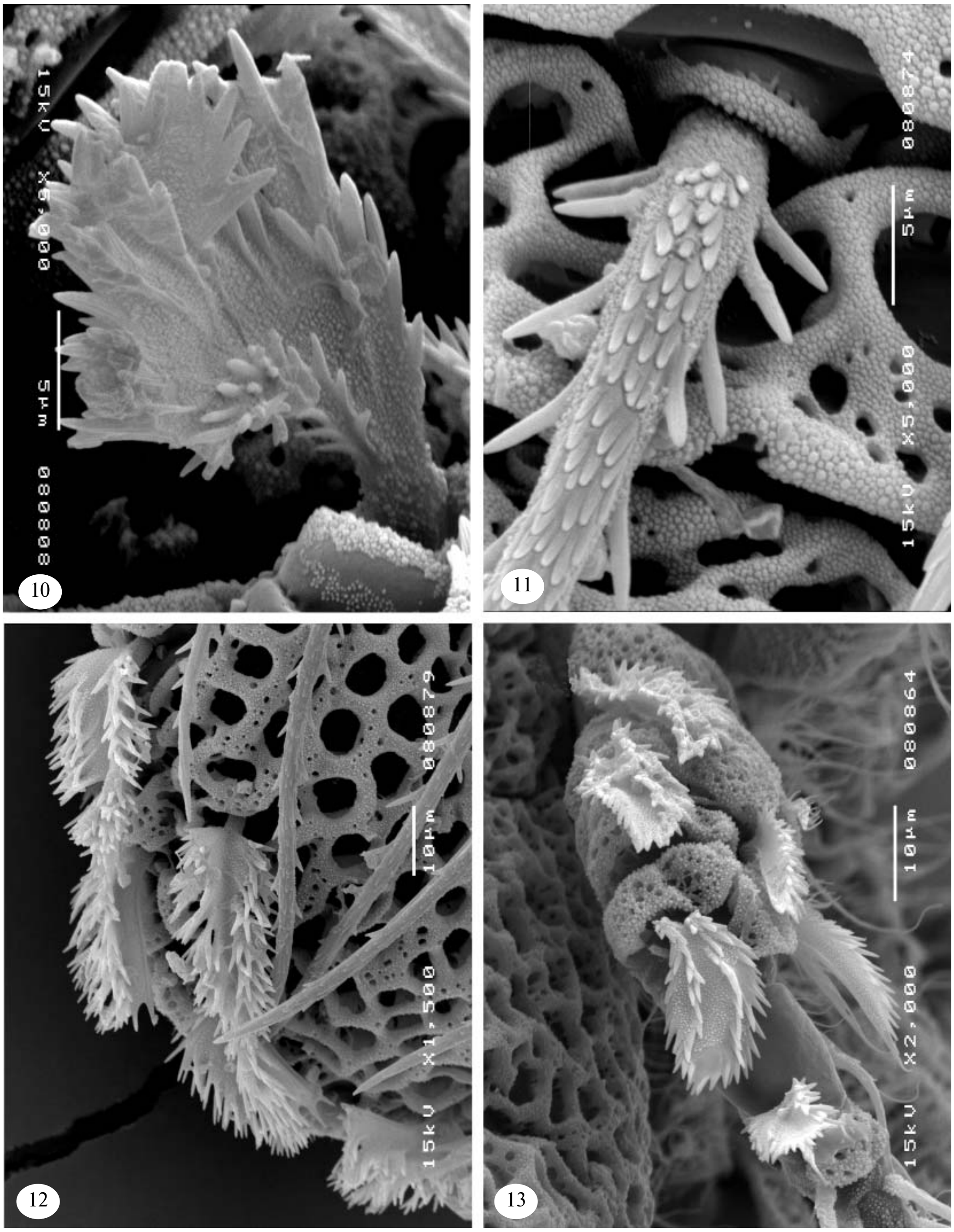


Fig. 10–13. *Cosmochthonius zanini*: 10 — anterior exobothridial seta; 11 — base of seta e_2; 12 — setae h_{1-3} and p_1; 13 — leg IV.

Рис. 10–13. *Cosmochthonius zanini:* 10 — передняя экзобордитиальная щетинка; 11 — основание щетинки e_2; 12 — щетинки h_{1-3} и p_1; 13 — IV нога.

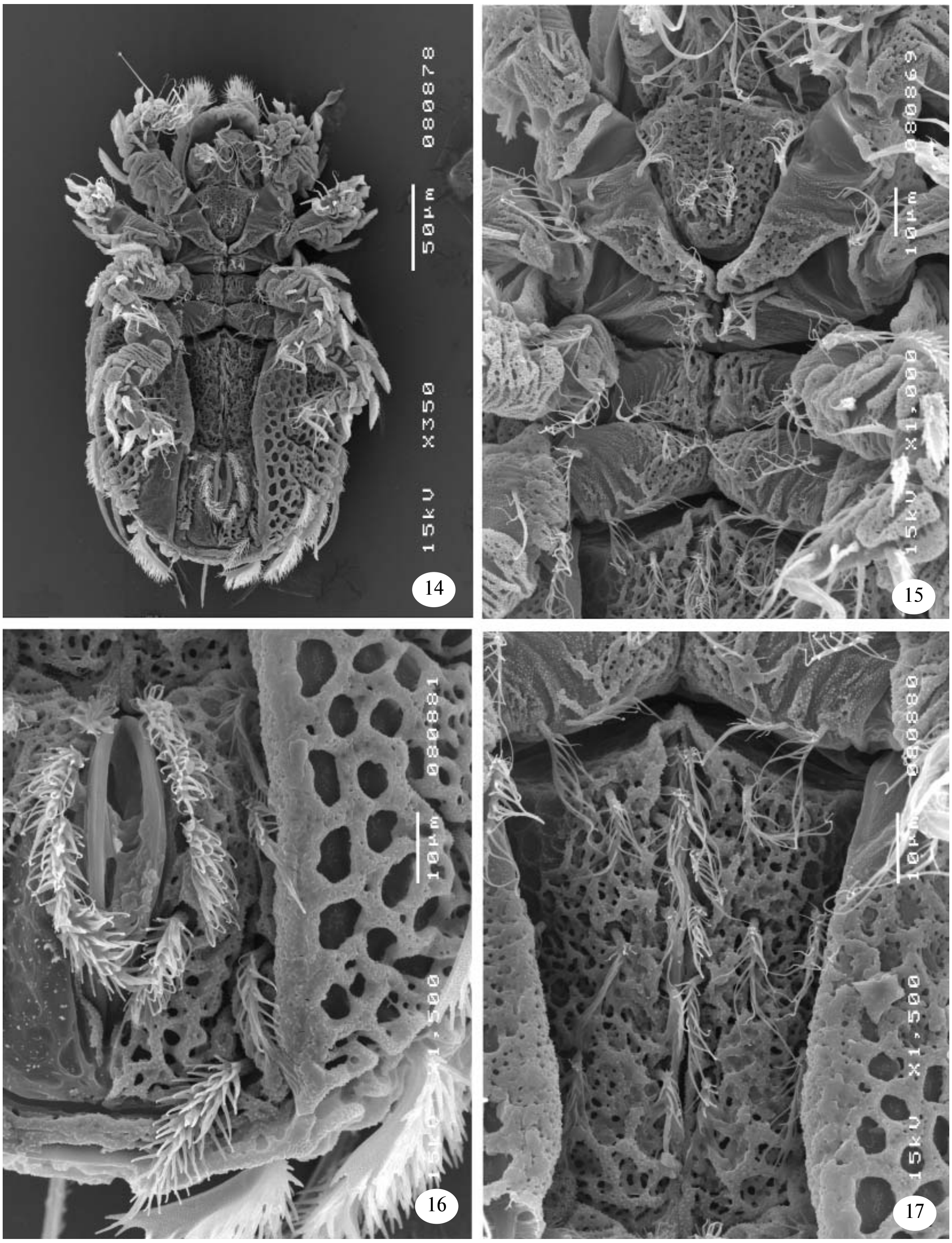


Fig. 14–17. *Cosmochthonius zanini:* 14 — ventral side; 15 — epimeral regoin; 16 — anal area; 17 — genital plates.

Рис. 14–17. *Cosmochthonius zanini:* 14 — вентральная сторона; 15 — эпимеральная область; 16 — апикальная зона; 17 — генитальные пластинки.

Bipectinate setae *e* and *f* situated on narrow, transverse intercalar sclerites between the plates Nm_1–Nm_2 and Nm_2–Py, accordingly. Secondary setae shorter than a width of a middle rib. Their size and number decrease toward the top. The middle rib covered by squamose spines (fig. 11–12).

Setae e_1 (142 mkm) and e_2 (133mkm) longer than f_1 (126.9 mkm) and f_2 (120 mkm). The distance e_1–e_1 (18.5 mkm) < e_1–e_2 (20.6 mkm), whereas f_1–f_1 (37.1 mkm) > f_1–f_2 (27.7 mkm). The setae *h* and *p* similar with setae *ro*, phylliform, long and thick, with bi- and trifurcate bristles. The setae h_{1-3} and p_1 close to margin of *Py*, whereas the setae p_2 and p_3 on ventral side.

Ventral side (fig. 14–17). Ventral plates and anal region covered with strong cerotegument, similarly to notogaster, and genital plates covered by thinner, not clearly defined wax layer. Epimeral region and gnathosoma sporadically with thin cerotegument.

Subcapitulum anarthric. Hypostomal (*h*) setae long, slender, biramose, reaching from posterior part of mentum to base of gena. Median infracapitular setae similar to setae *h* reaching to rutellum. Setation of pedipalps: 0–2–1–3–11.

Epimeral setae long, thin and biramose Epimeral formula (I–IV): 3–2–3–4.

Genital plate with 10 setae, similar to the epimeral setae. Six genital setae close to medial line of plate and four setae farther off. The anal and aggenital plate with 4 setae.

All anal setae densely ciliate, equal size whereas adanal setae ad_1 longest and ad_4 shortest.

Legs. Setation (trochanter to tarsus): I (0–5–5–6–19), II (1–6–5–6–17), III (2–3–4–4–15), IV (2–3–4–4–14). Solenidia (genu-tibia-tarsus): I (0–1–1), II (0–1–1), III (0–1–0), IV (0–1–0). Claws (I–IV): 2–3–3–3. The dorsal and lateral setae phylliform and wide with two or three lines by small spines (fig. 13).

Diagnosis. *Cosmochthonius zanini* sp. n. belongs to the *reticulatus-foliatus* species group, which is characterised by the thick cerotegument; it differs from other *Cosmochthonius* species by the wide, phylliform setae *c*, *d* and *cp*, very long setae *cp* (extending to insertions of setae h_3) and by the narrow, straight "collar" between bothridia.

Remarks. The specimens from Rhodes Island (Greece) differ from those collected in Crimea by longer secondary setae on the setae f_1, whereas the specimen from Turkey differs by longer secondary setae of f_1 and f_2 (fig. 3–4).

Etymology. We dedicate the new species to Alexander Zanin (Ukraine), who assisted and encouraged our work.

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